

## NOTES AND NEWS.

JULIEN DEBY, well known for his study of diatoms, died recently in London after a long illness.

DR. EMIL KNOBLAUCH has become an assistant in the botanical institute of the University of Tübingen.

MR. E. FISCHER refers *Æcidium penicillatum* Müll. (*Roestelia penicillata*) to *Gymnosporangium tremelloides* A. Br.<sup>1</sup>

A HERBARIUM of five thousand sheets has been presented by Dr. J. P. Lotsy to the Women's College of Baltimore.

DR. GUNTHER RITTER BECK VON MANNAGETTA has been called to the a.-o. professorship of systematic botany in the University of Vienna.

MR. M. B. WAITE announces in *Science* that he has discovered a remedy for pear blight. He has been investigating the disease for several years.

THE FIELD MEETING of the Ohio Academy of Sciences was held at Sandusky, July 2nd and 3d, with an attractive series of short excursions to collecting localities in the vicinity.

THE SUM of \$250,000 has been subscribed by citizens of New York city for a botanic garden, and the city is under obligation to contribute \$500,000 more. The garden is now assured. It will be located in Bronx Park, and occupy 250 acres.

A NEW JOURNAL, *Allgemeine botanische Zeitschrift*, devoted to systematic botany, appeared with the year, under the editorship of A. Kneucker of Karlsruhe. It costs six marks per year, consists of at least sixteen pages per number, and appears on the 15th of each month.

MR. FRANK H. LAMB of Leland Stanford Jr. University has collected about Mazatlan, Santiago, San Blas and other points in western Mexico during the winter past. The collection has been determined at the Gray herbarium and sets of 200-250 species will be ready for distribution about October first.

WILD PARSNIPS, that is feral plants of *Pastinaca sativa*, which are popularly supposed to be poisonous, are considered by Prof. L. H. Pammel (*Gard. & For.* 8: 228) to be quite harmless. He adduces evidence to uphold his opinion, and explains the popular belief by supposing that *Cicuta maculata* has been mistaken for parsnip.

BY ORDER of the Secretary of Agriculture, the work of the Division of Microscopy, in the United States Department of Agriculture, ceased on July 1st. The Division of Chemistry, the Division of Vegetable Physiology and Pathology, and the Office of Fiber Investigations re-

<sup>1</sup> *Hedwigia* 34: 1. 1895.



ceived the apparatus, specimens, books, etc., held by the Microscopist. This will be good news to those who have known the inefficiency of this ridiculously illogical division.

THE COLORADO SUMMER SCHOOL of science, philosophy and languages holds its fourth annual session from July 15th to August 16th. The situation of Colorado Springs is famous for its beauty and healthfulness, as it includes some of the most attractive Rocky Mountain scenery. The schedule of instruction embraces many subjects by distinguished educators. Botany is in charge of Professor Charles E. Bessey of the University of Nebraska.

THE Division of Vegetable Physiology and Pathology in the U. S. Department of Agriculture, has had under cultivation the past year something over one thousand varieties of wheat and oats. The grains have been collected from nearly all parts of the world, and have been grown chiefly for the purpose of obtaining information upon their rust-resisting qualities. Numerous crosses have been made, and material and facts obtained which will be used in further work.

THE AMERICAN NATURALIST has seemingly erected a new department, that of "vegetable physiology," under the editorship of Dr. Erwin F. Smith. As the editor takes a considerable part of the space in his initial number to attack the nomenclature movement, which can not be construed as having anything to do with physiology, it is not apparent why the items should not have appeared under the heading of "Botany," the department still edited by Dr. Charles E. Bessey.

A NEW DIRECTORY of botanists is in course of compilation by J. Dörfler, of the I. R. Court Museum and long at the head of the botanical exchange society of Vienna. It is intended to be a complete list of botanists, botanical gardens, institutes, societies and publications, both periodical and official, of all countries. Botanists will confer a favor by sending their full names, addresses and specialties; and directors of gardens or institutes are particularly requested to send lists of all employees whose names ought to appear in such a directory. Mr. Dörfler's address is Wien I, Burgring 7, Austria.

GEBEL'S sixth contribution, under the title Archegoniatenstudien (Flora 80: 1. 1895), is on the function and formation of elaters. He finds their biological significance to be double; (1) they function, particularly when young, as conductors of nutriment to the sporogenous cells; and, (2) when mature, as distributors of the spores. The latter object (not by any means the subordinate one Leclerc du Sablon suggests it to be), is accomplished in two ways; (1) either by acting as slings, energetically hurling away the spores at the moment of drying, as in the greater number of forms; or (2) by their slight elastic movements loosening up the tangle of spores and elaters so that it may be readily carried away by gentle air currents.

POLYEMBRYONY is not an uncommon phenomenon and arises from various causes. One of the most interesting cases was described a few years ago by Dodel in *Iris Sibirica*, and by Overton in *Lilium Martagon*, who showed that one embryo arose from the egg and another from one of the synergidæ. Now S. Tretjakow announces the forma-



tion of one or even three embryos from the antipodal cells of *Allium odorum*. Fertilization is micropylar, and a normal embryo arises from the egg and sometimes another from a synerg. The antipodal embryos are not the result of fertilization, he thinks, but offer an instance of apogamy in the development of prothallial tissue into a sporophyte. (Cf. Ber. d. deutsch. bot. Gesells 13: 13. 1895.)

DR. J. GRÜSS has adapted the reaction between diastase, guaiacum, and hydrogen peroxide to the microchemical recognition of diastase. Objects to be tested are to be laid, for a time sufficient to be permeated by it, in a dark brown solution of gum guaiacum in absolute alcohol. The alcohol is then allowed to evaporate and the object brought into a more or less dilute solution of  $H_2O_2$ , which colors the precipitated diastase of the cells a beautiful blue. By the use of this test, controlled by others, Grüss claims to have established the theory of Haberlandt which ascribes the secretion of diastase to the aleurone layer of grass seeds. He also finds that diastase is produced by the endosperm and cotyledonary tissues, and refutes the statements of Brown and Morris. (Cf. Ber. d. deutsch bot. Gesells. 13: 1. 1895.)

RECENT STATION BULLETINS comprise one upon local flora, two upon weeds and five upon diseases and their treatment. "The early flora of the Truckee valley" by Fred H. Hillman (Nev. no. 24) is an excellent manual of the spring flowers of the region. "The Russian thistle" is treated by Charles H. Shinn (Cal. no. 107) and by G. P. Clinton (Ill. no. 39), with illustrations. "Treatment of common diseases and insects injurious to fruits and vegetables," presumably by S. A. Beach (N. Y. no. 86) is a concise practical manual with index (56 pages). This station adopts the objectionable method of suppressing the names of those who write its bulletins. "Some special orchard treatment of the apple, pear and quince" by L. F. Kinney (R. I. no. 31); "Spraying of orchards: apples, quinces, plums," by E. G. Lodeman (Cornell no. 86); and "Prevention of potato blight" by H. H. Lamson (N. H. no. 22); all three have in view the use of Bordeaux mixture. "Damping off," by Geo. F. Atkinson (Cornell no. 94), is chiefly devoted to *Artotrogus* (Pythium) *Debaryanus* (Hesse), *A. intermedius* (De Bary), *Completozia complens* Lohde and *Volutella leucotricha* n. sp. (40 pages).

A CIRCULAR has been issued by Dr. Wm. Trelease, director of the Missouri Botanical Garden, calling the attention of botanists to the facilities afforded for research at the garden. In establishing and endowing the garden, its founder, Henry Shaw, desired among other things to provide facilities for advanced research in botany and cognate sciences. For this purpose, additions are being made constantly to the number of species cultivated in the grounds and plant houses, and to the library and herbarium, and, as rapidly as it can be utilized, it is proposed to secure apparatus for work in vegetable physiology, etc., the policy being to secure a good general equipment in all lines of pure and applied botany, and to make this equipment as complete as possible for any special subject on which original work is undertaken by competent students. All the facilities of the garden will be freely placed at the disposal of persons competent to carry on research work of value in botany or horticulture, subject only to such simple restrictions as are



necessary to protect the property of the garden from injury or loss. Persons who wish to make use of them are invited to correspond with the director, outlining with as much detail as possible the work they desire to do, and giving timely notice so that provision may be made for the study of special subjects. Those who have not published the results of original work should state their preparation for any investigation they propose to undertake.

TWO MOST IMPORTANT papers on physiological topics have recently been published in the Philosophical Transactions of the Royal Society of London, by Mr. F. Frost Blackman of St. John's College, the senior demonstrator in botany in the University of Cambridge. The first of these<sup>1</sup> describes a new method of investigating the carbonic acid exchanges of plants, by means of a most ingenious combination of respiratory (*resp.* assimilatory) absorption and titration chambers with aspirators and pressure bulbs. The apparatus is in duplicate to allow continuous observations, and while very complicated in connection is very simple to manipulate, requiring only the turning of stop-cocks. The aim is to absorb by baryta water the  $\text{CO}_2$  in the air which has been drawn over the plant, to titrate the whole of the baryta water with  $\text{HCl}$ , using phenol-phthalein as an indicator, and then to empty the absorption tube without ever permitting the access of atmospheric air to the interior of the apparatus or interrupting the observations.

Working with this apparatus, Mr. Blackman reaches in his second paper<sup>2</sup> the following results, which set some matters in a new light, and demand careful consideration:

1. Under normal conditions, practically the sole pathway for  $\text{CO}_2$  into or out of the leaf is by the stomata.
2. In young leaves the cuticle seems to be no more permeable to  $\text{CO}_2$  than in mature leaves.
3. If the stomata be mechanically blocked an appreciable osmosis of  $\text{CO}_2$  may take place through the cuticle provided that the tension of the  $\text{CO}_2$  be great enough.
4. The normal amount of  $\text{CO}_2$  in the atmosphere is not sufficient to produce any appreciable osmosis into a leaf with its stomata blocked; assimilation therefore cannot continue under these conditions.
5. The experimental optimum of  $\text{CO}_2$  for assimilation depends on the structural porosity of the leaf, so that if this be reduced by blocking the stomata even pure  $\text{CO}_2$  may not quite effect optimal assimilation.
6. To this, and not to the stomata being inoperative in gaseous exchange (which was Boussingault's view), is due the fact that in concentrated  $\text{CO}_2$  a leaf with its stomata open assimilates less than one with the stomata blocked.
7. In bright light a fully green leaf assimilates all the  $\text{CO}_2$  that it is forming by respiration, and none escapes from it. Garreau's demonstration to the contrary is only an expression of the imperfection of the conditions under which it was performed.

<sup>1</sup>l. c. 186 B: 485-502. 1895.

<sup>2</sup>l. c. 186 B: 503-562. 1895.